

CLAIMS

1. A method for designing an arm structure for a robot having an arm which can rotate vertically and forward over a prescribed angle around an axial line extending substantially between two shoulders, comprising the steps of:
- 5 defining a vertical extent of a region in front of the robot that can be accessed by the arm in a fully extended state; and
- determining a length of the arm and a height of the axis of rotation of the arm in such a manner that a range of rotational motion of the arm in accessing the region can
- 10 be covered by a range in which the fore-and-aft distance to the tip of the arm can be linearly approximated.
2. A method for designing an arm structure for a robot according to claim 1, wherein a height of the axis of rotation of the arm is about 910 mm, and the arm is
- 15 adapted to swing vertically at least by 240 mm at its free end both upward and downward from a horizontal line.
3. A method for designing an arm structure for a robot according to claim 2, wherein a maximum tolerated error of the fore-and-aft distance of the free end of the
- 20 arm is 15 mm, and the arm is at least 528 mm long, and adapted to swing at least  $\pm 27$  degrees from a horizontal line.
4. A method for designing an arm structure for a robot according to claim 2, wherein a maximum tolerated error of the fore-and-aft distance of the free end of the
- 25 arm is 20 mm, and the arm is at least 422 mm long, and adapted to swing at least  $\pm 35$

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